

TAMMANY ALTERNATIVE CENTER (PWS 2350027) SOURCE WATER ASSESSMENT FINAL REPORT

March 13, 2002



State of Idaho Department of Environmental Quality

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated source water assessment area and sensitivity factors associated with the well and aquifer characteristics.

This report, *Source Water Assessment for Tammany Alternative Center, Lewiston, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Tammany Alternative Center drinking water system consists of two active wells. Both wells have a high susceptibility to all potential contaminants: inorganic contaminants (IOCs), volatile organic contaminants (VOCs), synthetic organic contaminants (SOCs), and microbial contaminants. The IOC nitrate was detected in both wells at levels above the maximum contaminant level (MCL) of 10 milligrams per liter (mg/L), giving an automatic high susceptibility to IOCs for both wells. Additionally, Waha Road (P2) runs within 50 feet of the new East Side Well, giving an automatic high susceptibility to all potential contaminant categories for that well. The predominant agricultural land of the area as well as the high hydrologic sensitivity and high system construction scores of both wells contributed to the overall susceptibility of the drinking water system.

The current water chemistry issue that affects the wells of the Tammany Alternative Center drinking water system pertains to elevated levels of nitrate detected in both wells. In October 1994, nitrate levels in the East Side Well were at 13.5 mg/L and in November 1994, nitrate was at 12.4 mg/L. In 1997, nitrate in the East Side Well was at 14.9 and in the Old Well, nitrate was at 15.0 mg/L. In 1998, nitrate was recorded at 14.7 mg/L in the Old Well. All of these levels are greater than the nitrate MCL of 10 mg/L. However, in 1999, the nitrate levels dropped in the East Side Well to 0.012 mg/L and the distribution system recorded a nitrate level of 0.016 mg/L. Total coliform bacteria were detected in the distribution system in 1999 but none have been detected at the wellheads. No VOCs or SOCs have been detected in the water system.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the Tammany Alternative Center, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system’s components and its capacity). The Center may need to implement engineering controls to reduce the nitrate levels in the wells if these levels begin to rise again. Also, disinfection practices should be implemented if microbial contamination becomes a problem. No chemicals should be stored or applied within the 50-foot radius of the wellhead. The Tammany Alternative Center may want to investigate greater protection measures

concerning the East Side Well to protect it against contamination due to accidental spills or releases associated with Waha Road (P2) that runs within 50 feet of the wellhead. As much of the designated protection areas are outside the direct jurisdiction of the Tammany Alternative Center, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation encompasses urban and commercial land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR TAMMANY ALTERNATIVE CENTER, LEWISTON, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the rankings of this assessment mean.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The local community, based on its own needs and limitations, should determine the decision as to the amount and types of information necessary to develop a drinking water protection program. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The public drinking water system for the Tammany Alternative Center is comprised of two ground water wells that serve approximately 80 people through one connection. The wells are located along Waha Road (P2) approximately 1.5 miles south of Lewiston Orchards (Figure 1). The East Side Well is the main well of the system and the Old Well is a backup used mostly for irrigation. Even though the Old Well is not used primarily for drinking water, it is connected to the system.

The current water chemistry issue that affects the wells of the Tammany Alternative Center drinking water system pertains to elevated levels of nitrate detected in both wells. In October 1994, nitrate levels in the East Side Well were at 13.5 mg/L and in November 1994, nitrate was at 12.4 mg/L. In 1997, nitrate in the East Side Well was at 14.9 and in the Old Well, nitrate was at 15.0 mg/L. In 1998, nitrate was recorded at 14.7 mg/L in the Old Well. All of these levels are greater than the nitrate MCL of 10 mg/L. However, in 1999, the nitrate levels dropped in the East Side Well to 0.012 mg/L and the distribution system recorded a nitrate level of 0.016 mg/L. Total coliform bacteria were detected in the distribution system in 1999 but none have been detected at the wellheads. No VOCs or SOCs have been detected in the water system.

Defining the Zones of Contribution – Delineation

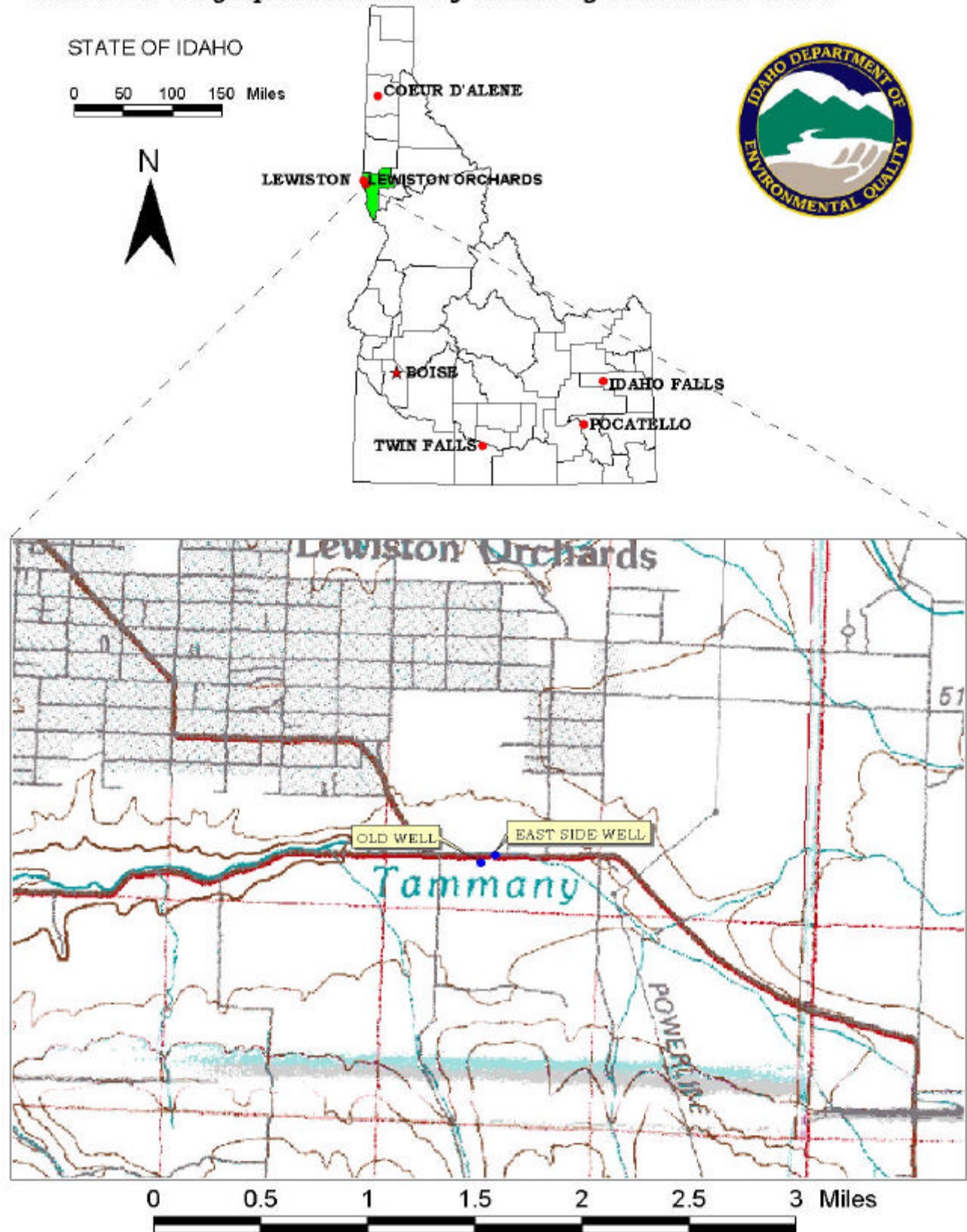
The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with the University of Idaho to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the basalt aquifer of the Clearwater Plateau in the vicinity of the Tammany Alternative Center wells. The computer model used site specific data, assimilated by the University of Idaho from a variety of sources including operator input, local area well logs, and hydrogeologic reports (detailed below).

The Tammany source wells are located southeast of Lewiston, and are completed in Wanapum Formation Basalts. The Wanapum Formation of the Columbia River Basalt Flows overlies the Grande Ronde Formation. Ground water wells in the Wanapum are not as productive as are wells in the Grande Ronde, typically producing 50 gpm or less. However, the Wanapum, where present, is more accessible to drilling because it is above the Grande Ronde.

A geologic map (Rember and Kauffman, 1993) was used to document where the Wanapum is exposed and has been eroded away. This includes the Lapwai /Sweetwater Creek region to the east, and the Snake River to the west. The Wanapum has not been removed entirely along the Snake River - there is a reach between Asotin and the confluence that may be continuous under the Snake River.

Groundwater in the Wanapum Formation in the vicinity of Lewiston has been modeled by others (Wyatt-Jakims, 1994; steady-state base case) to be flowing from the southeast toward the confluence of the Snake and the Clearwater.

FIGURE 1. Geographic Location of Tammany Alternative Center



A component of vertical recharge into the Wanapum is assumed to exist in this basin because the basalts overlying the Wanapum are laterally discontinuous as a result of the many rivers which have downcut through the formation.

Precipitation is 13 inches/year in Lewiston-Clarkston, whereas higher elevation areas average close to 25 inches annually (Cohen and Ralston, 1980). A modeling effort documented by Wyatt-Jaykim (1994), concluded on the basis of available data that 1 to 2 inches/year is a conservative estimate for recharge to the basalt aquifers in the vicinity of Lewiston and Lewiston Orchards. This ignores irrigation losses Wyatt-Jaykim (1994) that would supplement regional recharge in the vicinity of Lewiston Orchards. This is considered defensible for this model, despite the shallow stratigraphy of the Wanapum, because the Tammany wells are upgradient of Lewiston Orchards.

The capture zones delineated herein are based upon limited data and must be taken as best estimates. If more data become available in the future these delineations should be adjusted based on additional modeling incorporating the new data.

The delineated source water assessment areas for the wells of the Tammany Alternative Center can best be described as southeastward trending corridors that extend approximately 1.3 miles along Waha Road (Figure 2 and Figure 3). The delineated area for the Old Well is approximately one-half mile wide and is affected by well interference, splitting at the point where the delineation crosses the East Side Well. The delineation for the East Side Well encompasses a very thin area of approximately 100 feet wide, crossing Waha Road at Lolo Substation. The actual data used by the University of Idaho in determining the source water assessment delineation area is available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area and the surrounding area of the wells of the Tammany Alternative Center consists of mostly undetermined agriculture.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Figure 2. Tammany Alternative Center Delineation Map and Potential Contaminant Source Locations

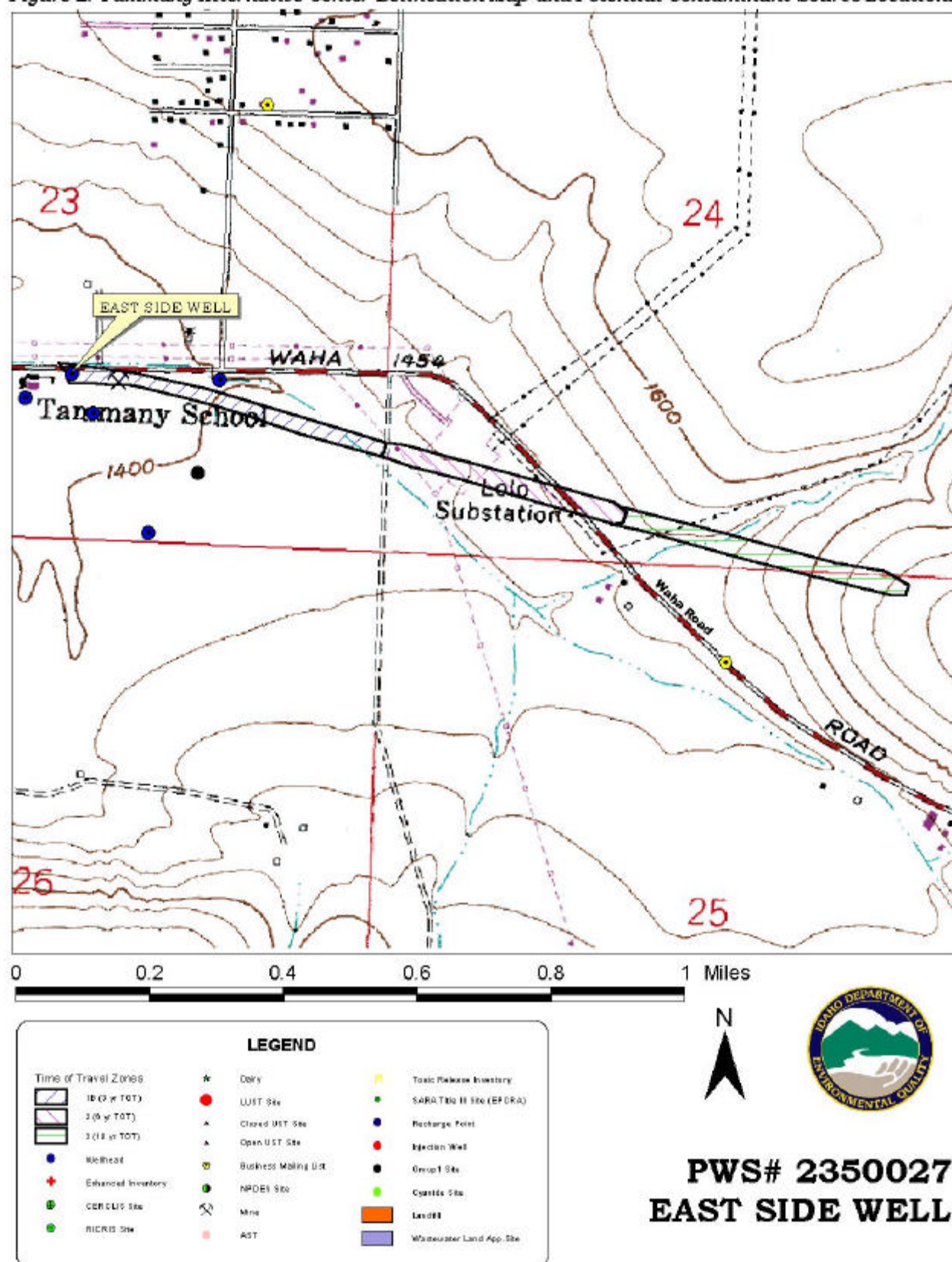
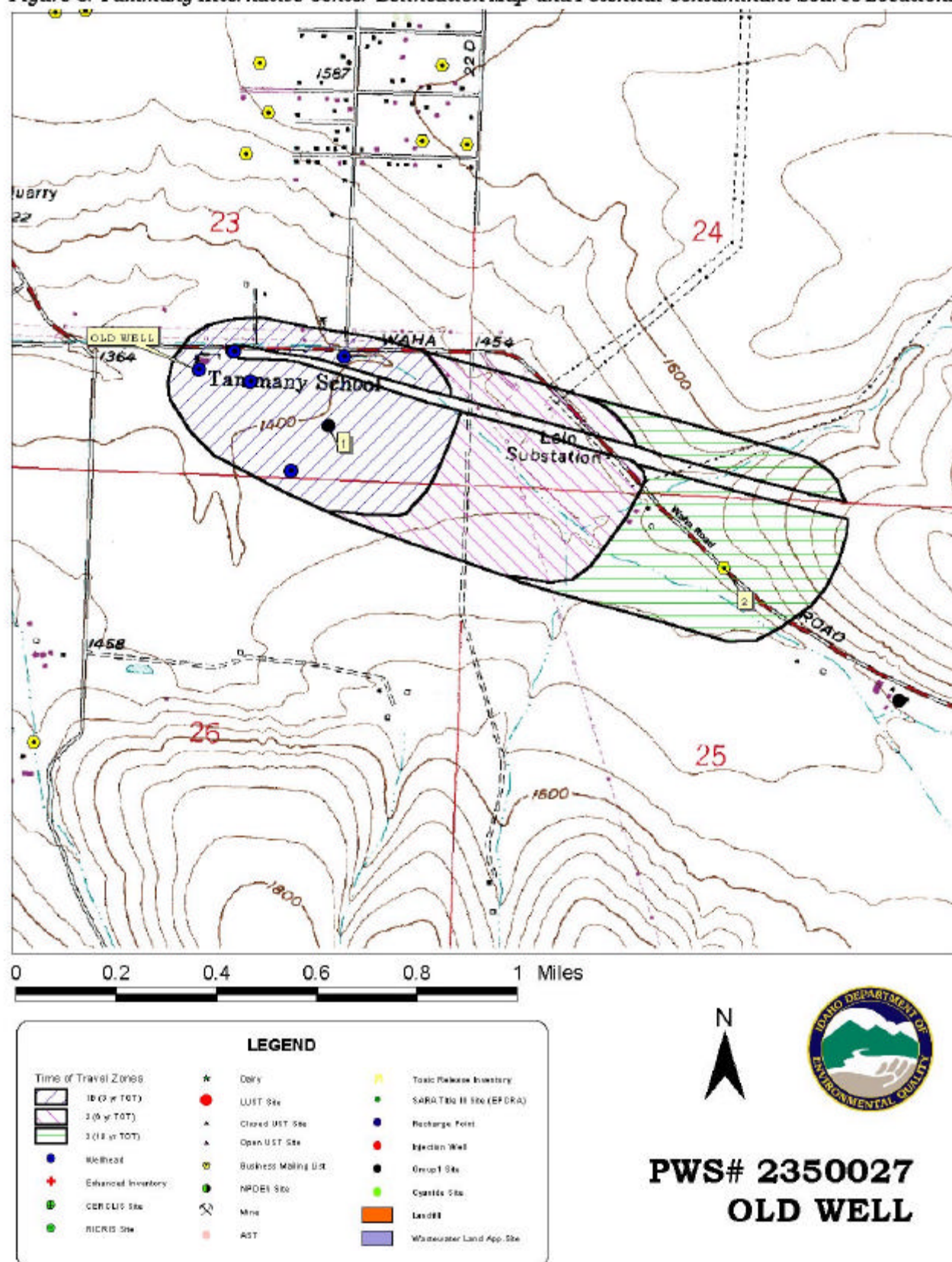


Figure 3. Tammany Alternative Center Delineation Map and Potential Contaminant Source Locations



Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in October and November 2001. The first phase involved identifying and documenting potential contaminant sources within the Tammany Alternative Center source water assessment areas (Figure 2 and Figure 3) through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water assessment areas of the Tammany Alternative Center wells contain Waha Road (P2) and Tammany Creek (Table 1 and Table 2). These sources can contribute leachable contaminants to the aquifer in the event of an accidental spill, release or flood. The delineation for the Old Well, that covers more area, also includes a group 1 site (a site that shows elevated levels of contamination) and a general contractor business (Table 2).

Table 1. Tammany Alternative Center East Side Well, Potential Contaminant Inventory.

Site	Description of Source ¹	TOT ² Zone	Source of Information	Potential Contaminants ³
	Waha Road (P2)	0 – 6	GIS Map	IOC, VOC, SOC, Microbes
	Tammany Creek	3 – 10	GIS Map	IOC, VOC, SOC, Microbes

² TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

³ IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 2. Tammany Alternative Center Old Well, Potential Contaminant Inventory.

Site	Description of Source ¹	TOT ² Zone	Source of Information	Potential Contaminants ³
1	Group 1 Site-Nitrate	0 – 3	Database Search	IOC
2	General Contractor	6 – 10	Database Search	IOC, VOC, SOC
	Waha Road (P2)	0 – 10	GIS Map	IOC, VOC, SOC, Microbes
	Tammany Creek	0 – 10	GIS Map	IOC, VOC, SOC, Microbes

² TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

³ IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix A contains the susceptibility analysis worksheets for the system. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity is high for both wells of the Tammany Alternative Center (Table 3). Regional soil data places the delineated areas within moderate to well drained soils. A well log was not available for the Old Well, preventing a determination of the composition of the vadose zone, the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. The well log for the East Side Well indicates that first ground water is found between 39 and 43 feet below ground surface (bgs) and that the vadose zone is composed predominantly of basalt.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced. A sanitary survey was conducted in 1986 for the system.

The Tammany Alternative Center wells rated high for system construction. The 1986 sanitary survey indicates that the Old Well is in an undrained pit that has standing water. The East Side Well does not have an adequate cap, vent, or surface seal. The well log for the Old Well is unavailable, limiting the amount of well construction information for that well. The well log for the East Side Well provided some well construction information.

The East Side Well was drilled in 1974 to a depth of 407 feet bgs and was deepened in 1977 to a depth of 600 feet bgs. It has a 0.250-inch thick, 8-inch diameter casing set to a depth of 70 feet into blue basalt followed by a 7-inch casing set to a depth of 102 feet bgs also into blue basalt. The annular seal of the well was installed to a depth of 120 feet into blue basalt and green shale-gravel. The static water level is recorded at 55 feet bgs and the well is not screened or perforated.

A determination was made as to whether current public water system (PWS) construction standards are being met. Though the wells may have been in compliance with standards when they were completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Eight-inch diameter wells require a casing thickness of

0.322-inches and six-inch diameter wells require a 0.280-inch thick casing. As such, the wells were assessed an additional point in the system construction rating.

Potential Contaminant Source and Land Use

The wells of the Tammany Alternative Center both rated moderate for IOCs (i.e. nitrates, arsenic), VOCs (i.e. petroleum products, chlorinated solvents), and SOC (i.e. pesticides), and low for microbial contaminants (i.e. bacteria). The undetermined agricultural land surrounding the well and the limited number of potential contaminant sources within the delineations contributed to the land use scores.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. In this case, nitrate (an IOC) was detected above the MCL in 1994 and 1997 in both wells, giving an automatic high susceptibility to IOCs for both wells. Additionally, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. Waha Road (P2) runs within 50 feet of the East Side Well, giving an automatic high susceptibility to all potential contaminants for that well. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, both wells of the Tammany Alternative Center rate high susceptibility to all potential contaminant categories.

Table 3. Summary of Tammany Alternative Center Susceptibility Evaluation

Well	Susceptibility Scores ¹									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
East Side Well	H	M	M	M	L	H	H(*) ^{2&3}	H(*) ²	H(*) ²	H(*) ²
Well #2	M	M	M	M	L	M	H(*) ³	H	H	H

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

²H(*) = Automatic high susceptibility due to the location of Waha Road (P2) within 50 feet of the East Side Well

³H(*) = Automatic high susceptibility due to the detection of nitrate at levels above the MCL

Susceptibility Summary

Overall, both wells have a high susceptibility to all potential contaminant categories. The location of Waha Road (P2) within 50 feet of the East Side Well gave an automatic high susceptibility to all potential contaminant categories. Additionally, the detection of nitrate at levels above the MCL in both wells gave an automatic high susceptibility to IOCs for both wells. The high hydrologic sensitivity and system construction scores for both wells as well as the predominant agricultural land of the area contributed to the overall susceptibility of the wells.

The current water chemistry issue that affects the wells of the Tammany Alternative Center drinking water system pertains to elevated levels of nitrate detected in both wells. In October 1994, nitrate levels in the East Side Well were at 13.5 mg/L and in November 1994, nitrate was at 12.4 mg/L. In 1997, nitrate in the East Side Well was at 14.9 and in the Old Well, nitrate was at 15.0 mg/L. In 1998, nitrate

was recorded at 14.7 mg/L in the Old Well. All of these levels are greater than the nitrate MCL of 10 mg/L. However, in 1999, the nitrate levels dropped in the East Side Well to 0.012 mg/L and the distribution system recorded a nitrate level of 0.016 mg/L. Total coliform bacteria were detected in the distribution system in 1999 but none have been detected at the wellheads. No VOCs or SOCs have been detected in the water system.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the Tammany Alternative Center, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey. The Center may need to implement engineering controls to reduce the nitrate levels in the wells if these levels begin to rise again. Also, disinfection practices should be implemented if microbial contamination becomes a problem. No chemicals should be stored or applied within the 50-foot radius of the wellhead. The Tammany Alternative Center may want to investigate greater protection measures concerning the East Side Well due to the County Road (P2) that runs within 50 feet of the wellhead. As much of the designated protection areas are outside the direct jurisdiction of the Tammany Alternative Center, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation encompasses urban and commercial land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Lewiston Regional DEQ Office (208) 799-4370

State DEQ Office (208) 373-0502

Website: <http://www2.state.id.us/deq>

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund, is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5 mg/L.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

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Appendix A

Tammany Alternative Center Susceptibility Analysis Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

1. System Construction

SCORE

Drill Date	3/29/74	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1986
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0

Total System Construction Score 5

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2

Total Hydrologic Score 6

3. Potential Contaminant / Land Use - ZONE 1A

IOC Score	VOC Score	SOC Score	Microbial Score
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Land Use Zone 1A	IRRIGATED PASTURE	1	1	1	1
Farm chemical use high	YES	0	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	YES	YES	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		1	1	3	1

Potential Contaminant / Land Use - ZONE 1B

Contaminant sources present (Number of Sources)	YES	1	1	1	1
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or	YES	3	1	1	
4 Points Maximum		3	1	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B Greater Than 50% Non-Irrigated Agricultural		2	2	2	2

Total Potential Contaminant Source / Land Use Score - Zone 1B 7 5 5 4

Potential Contaminant / Land Use - ZONE II

Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II Greater Than 50% Non-Irrigated Agricultural		1	1	1	

Potential Contaminant Source / Land Use Score - Zone II 4 4 4 0

Potential Contaminant / Land Use - ZONE III

Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	

Total Potential Contaminant Source / Land Use Score - Zone III 2 2 2 0

Cumulative Potential Contaminant / Land Use Score 14 12 14 5

4. Final Susceptibility Source Score

14 13 14 13

5. Final Well Ranking

High High High High

1. System Construction

SCORE

Drill Date		
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1986
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	NO	1

Total System Construction Score 6

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2

Total Hydrologic Score 6

3. Potential Contaminant / Land Use - ZONE 1A

IOC Score	VOC Score	SOC Score	Microbial Score
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Land Use Zone 1A	IRRIGATED PASTURE	1	1	1	1
Farm chemical use high	YES	0	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		1	1	3	1

Potential Contaminant / Land Use - ZONE 1B

Contaminant sources present (Number of Sources)	YES	3	3	3	3
(Score = # Sources X 2) 8 Points Maximum		6	6	6	6
Sources of Class II or III leacheable contaminants or	YES	2	2	2	
4 Points Maximum		2	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B Greater Than 50% Non-Irrigated Agricultural		2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		10	10	10	8

Potential Contaminant / Land Use - ZONE II

Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II Greater Than 50% Non-Irrigated Agricultural		1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0

Potential Contaminant / Land Use - ZONE III

Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0

Cumulative Potential Contaminant / Land Use Score

17	17	19	9
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4. Final Susceptibility Source Score

15	15	16	15
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5. Final Well Ranking

High	High	High	High
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